

Calculating Our Water Footprint!

Class overview and Lesson Rationale: This lesson is designed for a 30-student ICT class in the fourth grade. Students at my school have been exposed to themes of sustainability from an early age. They have “green recess” in the lower grades, visit the “green room” to do experiments as they get older, and the school even has a sustainability coordinator. Students are actively involved in recycling. However, they often do not realize which of their lifestyle choices actually have the greatest impact on the environment. For example, most people in the community are shocked to realize how much water it takes to manufacture a single t-shirt. They also do not realize that eating meat requires a tremendous amount of water and also contributes greatly to groundwater pollution.

Lesson Objective: This lesson is designed to help students assess their personal water use and see what parts of their lives are actually the greatest drains on this valuable resource. It is an opportunity for reflection and personal goal-setting grounded in facts.

Standards for Students:

RI.4.7: Interpret information presented visually, orally, or quantitatively (e.g., in charts, graphs, diagrams, time lines, animations, or interactive elements on Web pages) and explain how the information contributes to an understanding of the text in which it appears.

Standards for the Teacher: To engage students through student-centered activities that allow choice and cooperative exploration of the content (3C).

Lesson Activities

Connection: Here at BNS we are all trying to be more sustainable. Who can remind us what sustainability means? What are some things we do as a school to help us save resources?

Preassessment:

How much water do you use a day? Think about this morning from when you woke up to now. What are some ways you used water? Remember, water can be in many forms. It even takes water to grow trees, so if you used paper, you used water today!

*Students write a prediction/reflection in their science notebook in response to these questions.

Minilesson:

Start the mini-lesson with a share of students sharing out how they used water today. Maybe chart on an easel and sort into two categories: “Obvious water footprint” and “Hidden water footprint.”

- The average American uses 2,000 gallons of H₂O a day.
- What may come as a surprise is that very little of that—only five percent—runs through toilets, taps, and garden hoses at home. Nearly 95 percent of your water footprint is hidden in the food you eat, energy you use, products you buy, and services you rely on. (These facts come from

<http://environment.nationalgeographic.com/environment/freshwater/change-the-course/water-footprint-calculator/>)

To help students better understand hidden water footprints, have them zoom in on the manufacture of a t shirt. Hold up a cotton t shirt and ask students, “if I buy a new t shirt to wear, am I wasting water? Why or why not?” Then play them the video [How Your T Shirt Can Make A Difference](#). Through watching the video they will learn that it takes about 2,700 liters of water to make just one t-shirt.

Activity:

Students log on to Chromebooks. They use the Water Footprint Calculator to determine how much water they use, and record it in their science notebooks. [Water Footprint Calculator](#). Give students time to Turn and Talk during the activity to compare notes and reactions on what they are learning.

Exit Ticket: In their notebooks, students complete an Exit Ticket Reflection.

How much water did you consume for each of the following?

Home _____ Diet _____ Energy _____ Stuff _____ All _____

What surprised you about doing this activity?

What small steps could you take to have the biggest decrease in your water consumption?

What are three things you would want other kids at BNS to know about water consumption.

Teacher-facing rubric

	Needs Support	Developing	Got It
Discussion	Provided minimal ideas during group discussion, did not appear to be listening to classmates	Actively participated in group discussions with ideas that were on topic	Actively participated in group discussion with unique ideas that furthered the conversation, may have challenged or built on others' ideas
Initial Reflection	Initial reflection showed only cursory attempt to think about water usage during the morning (“I drank a glass of water”).	Initial reflection shows some attempt to think through morning sequence and find all water sources.	Initial reflection shows thoughtful attempt to consider water consumption of the morning, with multiple forms of consumption cited.
Exit Ticket	Exit ticket comments do not line up with the findings of student's Water Footprint Calculation, demonstrating limited understanding of the activity's implications.	Exit ticket comments are aligned with the findings from the student's Water Footprint Calculation, and provide surface analysis of human choices and their connection to water consumption.	Exit ticket comments are aligned with the findings from the student's Water Footprint Calculation, and provide surface analysis of human choices and their connection to water consumption.

